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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,221	11/26/2003	Eric A. Merz	116594	5748

25944 7590 03/13/2006

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EXAMINER	
GARCIA JR, RENE	
ART UNIT	**PAPER NUMBER**
2853	

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/721,221	MERZ ET AL.	
	Examiner	Art Unit	
	Rene Garcia, Jr.	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) *32-36* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31 37-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *26 November 2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 26 November 2003 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because it list an attorney docket number and unpublished US applications numbers in the "US Patent Documents" section. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

With regards to those documents cited by applicant in "US Patent Documents" section, examiner has considered as to the merits the equivalent US patent application publications which are listed on PTO-892 Notice Of Reference Cited related to current office action.

Election/Restrictions

2. Claims 32-36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention group II, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 14 December 2005.

3. Applicant's election with traverse of invention group I in the reply filed on 14 December 2005 is acknowledged. The traversal is on the ground(s) that subject matter of all the claims is sufficiently related and a thorough search of one group would encompass both groups, thus

would not present a serious burden upon the examiner. This is not found persuasive because in reference to MPEP 806.05(f) product can be restricted from the process if the examiner can demonstrate that the product as claimed can be made by another materially different process; defining the product in terms of a process by which it is made is nothing more than a permissible technique that applicant may use to define the invention. Inventions in Groups I and II are classified in different classes and therefore present a serious burden to the examiner in searching.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 14, 17-20, 37-39 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable by Tanuma et al. (US 5,059,046) in view of Niikura et al. (US 5,880,754).

Tanuma et al. discloses the following claimed limitations:

*regarding claims 1 and 37, thermally-conductive carriage (fig. 3-5; col. 4, line 68 – col. 3, line 20)

*structure upon which the thermally-conductive carriage translates/**shaft, 12/** (fig. 3; col. 3, lines 5-6)

*at least one thermally-conductive interface structure between the thermally-conductive carriage and the structure upon which the thermally-conductive carriage translates that provides a

heat flow path from the thermally-conductive carriage into the at least one thermally-conductive interface structure (col. 3, lines 31-40 and lines 45-51)

Tanuma et al. does not disclose the following claimed limitations:

*regarding claims 1 and 37, carriage is a fluid ejector carriage

*fluid ejector module in thermal contact with the thermally-conductive fluid ejector carriage device

*regarding claim 14, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad

*regarding claim 15, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one thermally-conductive heat sink compound

*regarding claim 16, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module comprises at least a temporary bond between the thermally-conductive fluid ejector carriage device and the fluid ejector module

*regarding claim 17, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one mechanical device or structure

*regarding claims 18, 38 and 39, thermally-conductive fluid ejector carriage device further comprises a receiving area usable to receive a cartridge comprising a container that stores a fluid to be ejected by the fluid ejector module in contact with a fluid ejector module

*regarding claim 19, container that stores the fluid is molded from a thermally-conductive material and the contact between the container that stores fluid and the fluid ejector module establishes a heat flow path for heat dissipation

*regarding claim 20, contact between the container that stores fluid and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad

*regarding claim 48, augmenting the contact between the at least one heat sink and the thermally-conductive polymer carriage device using at least one compliant, thermally-conductive pad

Niikura et al. discloses the following:

*regarding claims 1 and 37, carriage is a fluid ejector carriage (col. 5, lines 29-44) for the purpose of forming an image on a recording medium

*fluid ejector module/**recording head, 50/** in thermal contact with the thermally-conductive fluid ejector carriage device (col. 7 lines 32-40) for the purpose of forming an image on a recording medium

*regarding claim 14, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad (col. 7, lines 32-40 - carriage acts as a heat sink therefore it is obvious to use similar means to transfer heat between elements) for the purpose of dissipating heat

*regarding claim 17, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one mechanical device or structure (col. 6, lines 22-28 -carriage acts as a heat sink therefore it is obvious to use similar means to transfer heat between elements) for the purpose of dissipating heat

*regarding claims 18, 38 and 39, thermally-conductive fluid ejector carriage device further comprises a receiving area/**head holder, 61**/ usable to receive a cartridge/**50**/ comprising a container that stores a fluid to be ejected by the fluid ejector module in contact with a fluid ejector module (col. 7, lines 32-40; fig. 6A & 6B) for the purpose of securing the cartridge

*regarding claim 19, container that stores the fluid is molded from a thermally-conductive material and the contact between the container that stores fluid and the fluid ejector module establishes a heat flow path for heat dissipation (col. 6, lines 9-27; col. 7, lines 32-40) for the purpose of dissipating heat

*regarding claim 20, contact between the container that stores fluid and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad/**block, 68/** (col. 7, lines 32-40) for the purpose of heat dissipation

*regarding claim 48, augmenting the contact between the at least one heat sink and the thermally-conductive polymer carriage device using at least one compliant, thermally-conductive pad (block/68/; col. 7, lines 32-40 - carriage acts as a heat sink therefore it is obvious to use similar means to transfer heat between elements) for the purpose of improving heat transfer

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize carriage that is a fluid ejector carriage; and fluid ejector module in thermal contact with the thermally-conductive fluid ejector carriage device; contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad; contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one mechanical device or structure; thermally-conductive fluid ejector carriage device further comprises a receiving area usable to receive a cartridge comprising a container that stores a fluid to be ejected by the fluid ejector module in contact with a fluid ejector module; container that stores the fluid is molded from a thermally-conductive material and the contact between the container that stores fluid and the fluid ejector module establishes a heat flow path for heat dissipation; and contact between the container that stores fluid and the fluid ejector module is augmented with at least one compliant, thermally-conductive pad; augmenting the contact between the at least one heat sink and the thermally-conductive polymer carriage device using at

least one compliant, thermally-conductive pad as taught by Niikura et al. into Tanuma et al. for the purposes of forming an image on a recording medium; securing the cartridge; dissipating heat ; and improving heat transfer

6. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanuma et al. (US 5,059,046) as modified by Niikura et al. (US 5,880,754) as applied to claim 1 above, and further in view of Plotkin et al. (US 6,305,786).

Tanuma et al. discloses all the claimed limitations except for the following:

*regarding claim 2, thermally-conductive fluid ejector carriage device is molded from a polymer

*regarding claim 11, polymer is at least one of liquid crystal polymer, polyphenylene sulfide and polysulfone

Plotkin et al. disclose the following:

* regarding claim 2, thermally-conductive fluid ejector carriage device is molded from a polymer (col. 2, lines 13-15) for the purpose of making carriage lightweight

*regarding claim 11, polymer is at least one of liquid crystal polymer, polyphenylene sulfide and polysulfone (col. 2, lines 13-15) for the purpose of making carriage lightweight

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize at least one thermally-conductive material includes at least one polymer; polymer is at least one of liquid crystal polymer, polyphenylene sulfide and polysulfone as taught by Plotkin et al. into Tanuma et al. as modified by Niikura et al. for the purpose of making carriage lightweight.

7. Claims 3-7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanuma et al. (US 5,059,046) as modified by Niikura et al. (US 5,880,754) as applied to claim 1 above, and further in view of Miller et al. (US 2005/0109766).

Tanuma et al. as modified by Niikura et al. discloses all the claimed limitations except for the following:

*regarding claim 3, polymer is a polymer material containing a base polymer and at least one thermally conductive filler material

*regarding claim 4, at least one of the at least one thermally-conductive filler material has a thermal conductivity greater than about 10 W/m° C

*regarding claim 5, at least one of the at least one thermally-conductive filler material has a thermal conductivity less than about 100 W/m°C

*regarding claim 6, at least one of the at least one thermally-conductive filler material has a thermal conductivity of greater than 10 W/m° C

*regarding claim 7, at least one of the at least one thermally-conductive filler material includes a graphite material

*regarding claim 9, at least one of the at least one thermally-conductive filler material is a ceramic material

*regarding claim 10, ceramic material is at least one of boron nitride and aluminum nitride

Miler et al. disclose the following:

*regarding claim 3, polymer is a polymer material containing a base polymer and at least one thermally conductive filler material (paragraph 0020 & 0017-0018; nickel) for the purpose of dissipating heat

*regarding claim 4, at least one of the at least one thermally-conductive filler material has a thermal conductivity greater than about 10 W/m° C (inherent feature of nickel 91.088 W/m°C) for the purpose of dissipating heat

*regarding claim 5, at least one of the at least one thermally-conductive filler material has a thermal conductivity less than about 100 W/m°C (inherent feature of nickel 91.088 W/m°C) for the purpose of dissipating heat

*regarding claim 6, at least one of the at least one thermally-conductive filler material has a thermal conductivity of greater than 10 W/m° C (inherent feature of nickel 91.088 W/m°C) for the purpose of dissipating heat

*regarding claim 7, at least one of the at least one thermally-conductive filler material includes a graphite material (paragraph 0020 & 0017-0018) for the purpose of dissipating heat

*regarding claim 9, at least one of the at least one thermally-conductive filler material is a ceramic material (paragraph 0020 & 0017-0018) for the purpose of dissipating heat

*regarding claim 10, ceramic material is at least one of boron nitride and aluminum nitride (paragraph 0020 & 0017-0018) for the purpose of dissipating heat

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize polymer is a polymer material containing a base polymer and at least one thermally conductive filler material; at least one of the at least one thermally-conductive filler material has a thermal conductivity greater than about 10 W/m° C; at least one of the at least one thermally-conductive filler material has a thermal conductivity less than about 100 W/m°C; at least one of the at least one thermally-conductive filler material has a thermal conductivity of greater than 10 W/m° C; at least one of the at least one thermally-conductive filler material includes a graphite material; at least one of the at least one thermally-conductive filler material is a ceramic material; and ceramic material is at least one of boron nitride and aluminum nitride as taught by Miller et al. into Tanuma et al. as modified by Niikura et al. for the purpose of dissipating heat.

8. Claims 3, 7 and 8 are rejected under 35 U.S.C. 103(a) as being obvious over Tanuma et al. (US 5,059,046) as modified by Niikura et al. (US 5,880,754) and Plotkin et al. (US 6,305,786) as applied to claim 2 above, and further in view of Miller et al. (US 2005/0109766).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Tanuma et al. as modified by Niikura et al. discloses all the claimed limitations except for the following:

*regarding claim 3, polymer is a polymer material containing a base polymer and at least one thermally conductive filler material

*regarding claim 7, at least one of the at least one thermally-conductive filler material includes a graphite material

*regarding claim 8, graphite material is formed using a petroleum pitch based material

Miler et al. disclose the following:

*regarding claim 3, polymer is a polymer material containing a base polymer and at least one thermally conductive filler material (paragraph 0032) for the purpose of dissipating heat

*regarding claim 7, at least one of the at least one thermally-conductive filler material includes a graphite material (paragraph 0032) for the purpose of dissipating heat

*regarding claim 8, graphite material is formed using a petroleum pitch based material (paragraph 0032) for the purpose of dissipating heat

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize polymer is a polymer material containing a base polymer and at least one thermally conductive filler material; at least one of the at least one thermally-conductive filler material includes a graphite material; and graphite material is formed using a petroleum pitch based material as taught by Miller et al. into Tanuma et al. as modified by Niikura et al. for the purpose of dissipating heat.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanuma et al. (US 5,059,046) as modified by Niikura et al. (US 5,880,754) and Plotkin et al. (US 6,305,786) as applied to claim 2 above, and further in view of Satoi et al. (US 5,21,446).

Tanuma et al. as modified by Niikura et al. and Plotkin et al. discloses all the claimed limitations except for the following:

*regarding claim 12, polymer is chemically resistant to ink

Dudenhoefer et al. disclose the following:

*regarding claim 12, polymer is chemically resistant to ink (col. 5, lines 36-38) for the purpose of being chemically stable to withstand prolonged exposure to inkjet inks

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a polymer that is chemically resistant to ink as taught by Satoi

et al. into Tanuma et al. as modified by Niikura et al. and Plotkin et al. for the purposes of for the purpose of being chemically stable to withstand prolonged exposure to inkjet inks.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanuma et al. (US 5,059,046) as modified by Niikura et al. (US 5,880,754) as applied to claim 1 above.

Tanuma et al. as modified by Niikura et al. discloses all the claimed limitations except for the following:

*regarding claim 13, thermally-conductive fluid ejector carriage device and fluid ejector module are made of materials having similar coefficients of thermal expansion

It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose materials having similar coefficients of thermal expansion, since it has been held to be within the general skill of a worker in the art to select a know material on the basis of its suitability for the intended use as a matter of obvious design choice. **In re Leshin, 125 USPQ 416.**

11. Claims 15, 16 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanuma et al. (US 5,059,046) as modified by Niikura et al. (US 5,880,754) as applied to claim 19 above, and further in view of Mrvos et al. (US 2002/0001020).

Tanuma et al. discloses all the claimed limitations except for the following:

*regarding claim 15, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one thermally-conductive heat sink compound

*regarding claim 16, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module comprises at least a temporary bond between the thermally-conductive fluid ejector carriage device and the fluid ejector module

*regarding claim 21, contact between the container that stores fluid and the fluid ejector module is augmented with at least one thermally-conductive heat sink compound

*regarding claim 22, contact between the container that stores fluid and the fluid ejector module comprises at least a temporary bond between the container that stores fluid and the fluid ejector module

*regarding claim 23, contact between the container that stores fluid and the fluid ejector module is augmented with at least one mechanical device or structure

Mrvos et al. disclose the following:

*regarding claim 15, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one thermally-conductive heat sink compound (paragraph 0024, 0026 and 0027 - heater chip, 60 with adhesive - carriage acts as a heat sink therefore it is obvious to use similar means to transfer heat between elements) for the purpose of dissipating heat

*regarding claim 16, contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module comprises at least a temporary bond between the thermally-

conductive fluid ejector carriage device and the fluid ejector module (paragraph 0026 – adhesive; carriage acts as a heat sink therefore it is obvious to use similar means to transfer heat between elements) for the purpose of dissipating heat

*regarding claim 21, contact between the container that stores fluid/**container, 22/** and the fluid ejector module/**nozzle plate, 70/** is augmented with at least one thermally-conductive heat sink compound/**heater chip, 60 with adhesive/** (paragraph 0024, 0026 and 0027) for the purpose of providing heat transfer between nozzle plate and tank

*regarding claim 22, contact between the container that stores fluid and the fluid ejector module comprises at least a temporary bond between the container that stores fluid and the fluid ejector module (paragraph 0026 – adhesive) for the purpose of securing the components together for maximum heat transfer

*regarding claim 23, contact between the container that stores fluid and the fluid ejector module is augmented with at least one mechanical device or structure/**heater chip, 60/** (paragraph 0026) for the purpose of heat dissipation of the nozzle plate

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module is augmented with at least one thermally-conductive heat sink compound; contact between the thermally-conductive fluid ejector carriage device and the fluid ejector module comprises at least a temporary bond between the thermally-conductive fluid

ejector carriage device and the fluid ejector module; contact between the container that stores fluid and the fluid ejector module is augmented with at least one thermally-conductive heat sink compound; contact between the container that stores fluid and the fluid ejector module comprises at least a temporary bond between the container that stores fluid and the fluid ejector module; contact between the container that stores fluid and the fluid ejector module is augmented with at least one mechanical device or structure as taught by Mrvos et al. into Tanuma et al. as modified by Niikura et al. for the purposes of providing heat transfer between nozzle plate and tank; securing the components together for maximum heat transfer; and heat dissipation of the nozzle plate.

12. Claims 24-31 and 41-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanuma et al. (US 5,059,046) as modified by Niikura et al. (US 5,880,754) as applied to claim 1 above, and further in view of Berg et al. (US 2002/0003550).

Tanuma et al. discloses all the claimed limitations except for the following:

*regarding claim 24, thermally-conductive fluid ejector carriage device further comprises multiple receiving areas usable to receive multiple fluid ejector modules

*regarding claim 25, each receiving area is usable to receive a cartridge comprising a container that stores a fluid to be ejected by the fluid ejector module in contact with a fluid ejector module

*regarding claim 26, thermally-conductive fluid ejector carriage device further comprises an integral molded heat sink

*regarding claim 27, separate heat sink is mounted in contact with the thermally-conductive fluid ejector carriage device

*regarding claims 28 and 41, contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink is augmented with at least one compliant, thermally-conductive pad

*regarding claims 29, 42, 44 and 46, contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink is augmented with at least one thermally-conductive heat sink compound

*regarding claims 30, 40, 45, 47 and 50, contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink comprises at least a temporary bond between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink

*regarding claims 31 and 43, contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink is augmented with at least one mechanical device or structure

Berg et al. disclose the following:

*regarding claim 24, thermally-conductive fluid ejector carriage device further comprises multiple receiving areas usable to receive multiple fluid ejector modules**/tanks, 40-43/** (fig. 3; col. 49-57) for the purpose of providing images in color

*regarding claim 25, each receiving area is usable to receive a cartridge comprising a container**/tanks, 40-43/** that stores a fluid to be ejected by the fluid ejector module in contact with a fluid ejector module (fig. 3; col. 49-57) for the purpose of providing images in color

*regarding claim 26, thermally-conductive fluid ejector carriage device further comprises an integral molded heat sink**/10/** (col. 3,lines 49-50 & col. 4, lines 6-11; col. 7, lines 25-27) for the purpose of dissipating heat from the printhead

*regarding claim 27, separate heat sink is mounted in contact with the thermally-conductive fluid ejector carriage device (col. 3,lines 15-26 & lines 49-50 & col. 4, lines 6-11) for the purpose of dissipating heat from the printhead

* regarding claims 28 and 41, contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink is augmented with at least one compliant, thermally-conductive pad**/layer 19/** (col. 3, lines 16-18) for the purpose of improving heat transfer capabilities

* regarding claims 29, 42, 44 and 46, contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink is augmented with at least one thermally-conductive heat sink compound (col. 3, lines 19-27) for the purpose of improving heat transfer capabilities

* regarding claims 30, 40, 45, 47 and 50, contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink comprises at least a temporary bond between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink (col. 4, lines 6-11; springs can connect heat sink and carriage) for the purpose of securing a thermal connection between heat sink and carriage

* regarding claims 31 and 43, contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink is augmented with at least one mechanical device or structure (col. 4, lines 6-11; springs can connect heat sink and carriage) for the purpose of securing a thermal connection between heat sink and carriage

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize thermally-conductive fluid ejector carriage device further comprises multiple receiving areas usable to receive multiple fluid ejector modules; each receiving area is usable to receive a cartridge comprising a container that stores a fluid to be ejected by the fluid ejector module in contact with a fluid ejector module; thermally-conductive fluid ejector carriage device further comprises an integral molded heat sink; separate heat sink is mounted in contact with the thermally-conductive fluid ejector carriage device; contact between

the thermally-conductive fluid ejector carriage device and the separately mounted heat sink is augmented with at least one compliant, thermally-conductive pad; contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink is augmented with at least one thermally-conductive heat sink compound; contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink comprises at least a temporary bond between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink; and contact between the thermally-conductive fluid ejector carriage device and the separately mounted heat sink is augmented with at least one mechanical device or structure as taught by Berg et al. into Tanuma et al. as modified by Niikura et al. for the purposes of providing images in color; dissipating heat from the printhead; improving heat transfer capabilities; and securing a thermal connection between heat sink and carriage

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Holl (US 6,391,082) includes composites of powdered filler and polymer matrix for electronic packaging materials. Hanagata et al. (US 3,855,448) includes a carriage and guide rod in a recording apparatus for heat transfer.

Communications with the USPTO

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rene Garcia, Jr. whose telephone number is (571) 272-5980. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rene Garcia Jr
03 March 2006

K. FEGGINS
PRIMARY EXAMINER